AMENDMENTS TO THE CLAIMS

1-25. (Canceled)

26. (Currently amended) An imager, comprising:

a semiconductor substrate;

an array of photosensitive sites located on the substrate, the array including

a plurality of first photosensitive sites, wherein each first photosensitive site is configured to measure the level of a first spectral component in light received by the respective first photosensitive site, and

a plurality of second photosensitive sites, wherein each second photosensitive site is configured to measure the level of a second spectral component in light received by the respective second site, said second spectral component being different from said first spectral component; and

an interpolator located [[in]] on the substrate and configured to estimate the level of the first spectral component in the light received by at least one of the second photosensitive sites based on at least one measurement of the first spectral component obtained respectively by at least one of the first photosensitive sites.

27. (Previously Presented) The imager according to claim 26, wherein the first spectral component is a primary color of light.

28. (Previously Presented) The imager according to claim 26, wherein

each second photosensitive site is configured to measure the level of a second spectral component in light received by the respective second photosensitive site, and

the interpolator is further configured to estimate the level of the second spectral component in the light received by at least one of the first photosensitive sites based on at least one

measurement of the second spectral component obtained respectively by at least one of the second photosensitive sites.

29. (Canceled)

30. (Previously Presented) The imager according to claim 28, wherein

the array further comprises a plurality of third photosensitive sites, and

the interpolator is further configured to estimate the level of the first spectral component in the light received by at least one of the third photosensitive sites based on at least one measurement of the first spectral component obtained respectively by at least one of the first photosensitive sites, and to estimate the level of the second spectral component in the light received by at least one of the third photosensitive sites based on at least one measurement of the second spectral component obtained respectively by at least one of the second photosensitive sites.

31. (Previously Presented) The imager according to claim 30, wherein

each third photosensitive site is configured to measure the level of a third spectral component in light received by the respective third photosensitive site, and

the interpolator is further configured to estimate the level of the third spectral component in the light received by at least one of the first photosensitive sites and/or at least one of the second photosensitive sites based on at least one measurement of the third spectral component obtained respectively by at least one of the third photosensitive sites.

32. (Previously Presented) The imager according to claim 31, wherein

the first spectral component is a first primary color of light,

the second spectral component is a second primary color of light, and

the third spectral component is a third primary color of light.

33. (Currently amended) The imager according to claim 31, further comprising:

a line decoder located [[in]] on the substrate and having at least one serial output for transferring out at least one line of measured spectral components from the array during a read out operation; and

an A/D conversion element located [[in]] on the substrate and configured to receive the at least one line of measured spectral components read out from the line decoder and output the received measurements as digital values to the interpolator, and

wherein the interpolator estimates the first spectral component levels in the second and third photosensitive sites, the second spectral component levels in the first and third photosensitive sites, and the third spectral component level in the first and second photosensitive sites based on the digital values received from the A/D conversion element.

34. (Currently amended) The imager according to claim 26, further comprising:

a line decoder located [[in]] on the substrate and having at least one serial output for transferring out at least one line of measured spectral components from the array during a read out operation; and

an A/D conversion element located [[in]] on the substrate and configured to receive the at least one line of measured spectral components read out from the line decoder and output the received measurements as digital values to the interpolator, and

wherein the interpolator estimates the first spectral component levels in the second photosensitive sites based on the digital values received from the A/D conversion element.

35. (Currently amended) The imager according to claim 26, further comprising a line decoder located [[in]] on the substrate and having at least one serial output for transferring out at

least one line of measured spectral components from the array during a read out operation, wherein the at least one serial output of the line decoder transfers out either several sequential lines or a block of measured spectral components from the array during each read out operation.

36. (Canceled)

37. (Currently amended) An imager, comprising:

a semiconductor substrate;

a plurality of first photosensitive sites located [[in]] on the substrate, wherein each first photosensitive site is configured to measure the level of a first spectral component in light received by the respective first photosensitive site;

a plurality of second photosensitive sites located [[in]] on the substrate, each second photosensitive site being configured to measure the level of a second spectral component in light received by the respective second photosensitive site, said second spectral component being different from said first spectral component; and

an interpolator located [[in]] on the substrate and configured to receive digital data representing the spectral component levels measured in the first photosensitive sites and the second photosensitive sites, and to estimate the level of the first spectral component in the light received by at least one of the second photosensitive sites based on at least one digitized measurement of the first spectral component obtained respectively by at least one of the first photosensitive sites.

38. (Previously presented) The imager according to claim 37, further comprising a plurality of third photosensitive sites, wherein each third photosensitive site is configured to measure the level of a third spectral component in light received by the respective third photosensitive site, and wherein the interpolator is further configured to estimate

the level of the first spectral component in the light received by at least one of the third photosensitive sites based on at least one digitized measurement of the first spectral component obtained respectively by at least one of the first photosensitive sites,

the level of the second spectral component in the light received by at least one of the third photosensitive sites based on at least one digitized measurement of the second spectral component obtained respectively by at least one of the second photosensitive sites, and

the level of the third spectral component in the light received by at least one of the first photosensitive sites and/or at least one of the second photosensitive sites based on at least one digitized measurement of the third spectral component obtained respectively by at least one of the third photosensitive sites.

39. (Canceled)

40. (Previously presented) The imager according to claim 38, wherein

the first spectral component is a first primary color of light,

the second spectral component is a second primary color of light, and

the third spectral component is a third primary color of light.

41. (Previously Presented) The imager according to claim 40, wherein the interpolator output a twenty four bits of color data for each photosensitive site, with each color value being represented by eight bits.

42. (Previously presented) The imager according to claim 38, wherein the interpolator includes at least one serial register for storing digital bit values representing the spectral component

measurements from a photosensitive site being interpolated and the photosensitive sites neighboring the photosensitive site being interpolated.

43. (Previously presented) The imager according to claim 42, wherein, for estimating a spectral component level for a photosensitive site, the interpolator digitally weights the values of the spectral component being estimated, as measured by the photosensitive sites providing the measurements and which are currently stored in the at least one serial register, based on the distances of the photosensitive sites providing the measurements from the photosensitive site for which the spectral component is being estimated.

44. (Currently amended) An imaging device, comprising:

a display for displaying an image on an array of M x N pixels; and

an imager which comprises

a substrate,

an M x N array of photosensitive sites located on the substrate, the array including

a plurality of first photosensitive sites located [[in]] on the substrate, wherein each first photosensitive site is configured to measure the level of a first color component in light received by the respective first photosensitive site, and

a plurality of second photosensitive sites located [[in]] on the substrate, wherein each second photosensitive site is configured to measure the level of a second color component in light received by the respective second photosensitive site, said second color component being different from said first color component; and

an interpolator located [[in]] on the substrate and configured to receive digitized color component values corresponding to the measurements obtained in the first and second photosensitive sites, to estimate the level of the first color component in the light received by at least one of the second photosensitive sites based on at least one digitized color component obtained

respectively from at least one of the first photosensitive sites, and to estimate the level of the second color component in the light received by at least one of the first photosensitive sites based on at least one digitized color component obtained respectively from at least one of the second photosensitive sites.

45. (Previously Presented) The imaging device according to claim 44, wherein the interpolator estimates the color component level not measured in each respective photosensitive site in at least one line of photosensitive sites in the array during a readout operation.

46. (Previously Presented) The imaging device according to claim 45, wherein the interpolator estimates the color component level not measured in each respective photosensitive site in several sequential lines of photosensitive sites in the array during a readout operation.

47. (Previously presented) The imaging device according to claim 45, wherein the interpolator estimates the color component level not measured in each respective photosensitive site in a block of photosensitive sites in the array during a readout operation.

48. (Previously Presented) The imaging device according to claim 44, wherein the M x N array further includes a plurality of third photosensitive sites, wherein each third photosensitive site is configured to measure the level of a third color component in light received by the respective third photosensitive site, and

wherein the interpolator is further configured to estimate

the level of the first color component in the light received by at least one of the third photosensitive sites based on at least one digitized color component value obtained respectively from at least one of the first photosensitive sites,

the level of the second color component in the light received by at least one of the third photosensitive sites based on at least one digitized color component value obtained respectively from at least one of the second photosensitive sites, and

the level of the third color component in the light received by at least one of the first photosensitive sites and/or at least one of the second photosensitive sites based on at least one digitized color component value obtained respectively from at least one of the third photosensitive sites.

49-56. (Canceled)